

HONEYWELL'S DYNAMIC PREDICTIVE MAINTNANCE SOLUTION HELPS FORECAST AND PREVENT CATALYST PERFORMANCE ISSUES FOR SUBSTANTIAL COST SAVINGS

“ Faulty catalytic reactors can cost oil refineries millions in excess output of unclean oil. By employing a predictive maintenance approach that estimates remaining lifetime of a catalyst, refineries can plan timely replacement schedules and avoid costly product discards and production disruption.”

Case Study





An oil refinery's catalytic process is a crucial step in the processing of gasoline and diesel from crude. A catalyst that isn't replaced prior to its expiration puts this process in jeopardy, as crude loads that were not properly cleaned are discarded, causing downstream production to stop for the time of the unplanned replacement. When this happens, refineries expose themselves to millions of dollars per incident in excess production costs. Conversely, a scheduled maintenance replacement before the catalyst has finished its useful life is also associated with costly waste.

The Needs

Lifetime of a catalyst varies based on a number of factors. Because of that, refinery operations managers need to not only ensure timely replacement of the catalysts before they begin producing unusable product, but also match their remaining life to upcoming production needs.

To meet these objectives and ensure optimal production flow and crude quality, refineries need a predictive maintenance solution that can:

- Estimate catalyst aging based on its past usage and predict remaining run-time based on upcoming production needs to support a pre-planned replacement
- Facilitate a cost-benefit analysis to drive profitable operations decisions

The Solution

Working with one local refinery, the Honeywell Data Science and Analytics team developed a Dynamic Predictive Maintenance Solution, based on data collected from the temperature sensors inside the reactors, metal accumulation samples and crude contaminant cleanup result samples. By identifying contamination and product quality trends and temperature profiles, this unique solution can predict remaining useful lifetime of the catalyst. Using "what-if" scenarios, it then recommends replacement prior to its expiration – matched to the upcoming production needs.

This optimization-based decision support engine supports the business at a strategic level by advising operations teams on important factors, such as impact of feed quality on a catalyst's remaining life, expected product quality, operational conditions and need to recycle the feed.

The Benefits

By applying Honeywell's Dynamic Predictive Maintenance Solutions in plant operations, oil refineries can:

- Predict remaining lifetime of a catalyst and prevent future catalytic process failures
- Institute pre-planned catalyst replacement protocols based on the lifetime information and cost-benefit analysis
- Make more profitable operations decisions that support P&L objectives
- Save up to millions in more efficient asset management and reduced waste

For more information

sentience.honeywell.com